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CARRIER BLACKMAN AND ASSOCIATES			MEHTA, MEGHA S	
24101 NOVI ROAD				
SUITE 100			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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DETAILED ACTION

Claim Objections

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 10-12 have been renumbered 32-34.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claim recites "plunging portions," which has no basis in the specification or in the claims.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by "plunging portions." It is unclear whether this is

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referring to the tool, the product or the act of plunging. For purposes of examination, the Examiner is interpreting this as "plunging the plunging member into portions."

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 5, 6, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,794,835 Colligan et al.

Regarding claim 5, Colligan teaches a friction stir welding process for bringing a first end face and a second end face of a metal workpiece into abutment against each other, and thereafter joining said first end face and said second end face to each other with a rotating friction stir welding tool, wherein when a first end having said first end face is present on a retreating side and a second end having a second end face is present on an advancing side, a workpiece plunging member having a substantially circular cross section, which is disposed on a tip end of said friction stir welding tool, is plunged with a central region thereof being displaced from a boundary line between said first end face and said second end face to said second end within a range equal to or smaller than the radius of the workpiece plunging member (column 3, lines 48-59 and figure 5C).

Regarding claim 6, Colligan teaches said workpiece plunging member is displaced from said boundary line to said second end by a distance equal to or smaller than one-half of the radius of the workpiece plunging member (figure 5C).

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Regarding claim 7, Colligan teaches a workpiece having said first end face and a workpiece having said second end face are separate from each other and are made of a chief component comprising the same metal (column 3, line 66 – column 4, line 2), where both plates comprise aluminum.

Regarding claim 11, Colligan teaches that each of the first and second end faces comprise a finger, which forms protrusions along a joining direction of said first and second end faces when said first and second end faces are brought into said abutment (figure 3).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,794,835 Colligan et al in view of US 2002/0020164 Cleveland et al.

Regarding claim 1, Colligan teaches a method of manufacturing a body comprising the steps of bringing end faces of a plate material, the plate material having fingers projecting from corners along a joining direction, into abutment against each other to form protrusions projecting along the joining direction with end faces of the fingers, and also to form a body, gripping said protrusions, while the protrusions are gripped, friction stir welding abutting regions of the end faces of the plate material to join the end faces to each other, thereby forming a body having said protrusions and removing said protrusions (column 8, lines 19-27). Colligan does not explicitly

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teach gripping the protrusions. However, it would have been obvious to one of ordinary skill in the art to grip the protrusions during welding to ensure that the workpieces remain stationary during welding.

Colligan does not teach forming a hollow cylindrical body. Cleveland teaches a method of creating a tubular body by friction stir welding plates together (paragraph [0021]). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the tubular product of Cleveland in the process of Colligan because a wider variety of geometries of final products allows for a wider variety of applications for the products.

Regarding claim 2, Colligan in view of Cleveland teaches a hollow cylindrical body having said protrusions that are pressed from a side of an outer circumferential wall surface thereof when the abutting regions are friction stir welded (Colligan column 3, lines 48-59).

Regarding claim 3, Cleveland teaches that the abutting regions are friction stir welded while said hollow cylindrical body is inclined with respect to a horizontal direction (paragraphs [0026] and [0027]). Figure 8-1 shows an inclined hollow cylindrical body. Additionally, workpieces with varying thicknesses, as discussed in [0027], would have to be inclined with respect to a horizontal direction.

Regarding claim 10, Colligan teaches that the step of friction stir welding comprises plunging the plunging member into portions around the end faces along the abutment therebetween with a workpiece plunging member having a substantially circular cross section and wherein said workpiece plunging member is displaced from a boundary line between said end faces to one of the ends of said plate material within a range less than or equal to a radius of the workpiece plunging member (figure 5C).

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3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,794,835 Colligan et al in view of US 2002/0020164 Cleveland et al as applied to claim 1 above, and further in view of WO 99/33594 Lawrence.

Colligan teaches friction stir welding, and Cleveland teaches forming tubes. Neither Colligan nor Cleveland teaches forming a wheel rim. Lawrence teaches friction stir welding a wheel rim that is joined to a wheel disk to produce a vehicular wheel manufactured as said hollow cylindrical body (abstract). Lawrence does not explicitly teach the wheel disk. However, in order to be used in a vehicle, the wheel rim must have a disk. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a wheel rim of Lawrence in the process of Colligan and Cleveland because a wider variety of final products allows for a wider variety of possible applications.

4. Claims 8, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2,148,714 Urschel in view of US 5,794,835 Colligan et al.

Regarding claim 8, Urschel teaches a welding process for bringing a first end face and a second end face of a metal workpiece having a curved surface into abutment against each other to form abutting regions, and then welding the abutting regions to join said end faces to each other, wherein said first end face and said second end face have burrs projecting in a thickness direction of said metal workpiece, and sags projecting in a direction transverse to said thickness direction, when said abutting regions are formed, said sags of said first end face and said second end face are disposed in confronting relation to each other and positioned on an outer circumferential wall surface of said curved surface, and said burrs are positioned on an inner circumferential wall surface of said curved surface, and wherein the abutting regions are welded

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(page 1, column 2 line 58 – page 2, column 1, line 6 and figures 3 and 7). Urschel does not teach friction stir welding. Colligan teaches a method of joining workpieces by friction stir welding where a plunging member of a friction stir welding tool is plunged into the outer wall surface and thereafter said friction stir welding tool is moved to scan said abutting regions (column 3, lines 48-59). It would have been obvious to include the friction stir welding of Colligan in the process of Urschel at the time of the invention because friction stir welding creates a strong, good quality weld.

Regarding claim 9, Urschel teaches said first end face and said second end face are present on the same metal workpiece, and said abutting regions are provided by curving said metal workpiece to bring said first end face and said second end face into abutment against each other (figure 7).

Regarding claim 12, Colligan teaches that each of the first and second end faces comprise a finger, which forms protrusions along a joining direction of said first and second end faces when said first and second end faces are brought into said abutment (figure 3).

Response to Arguments

5. Applicant's arguments filed January 16, 2009, have been fully considered but they are not persuasive. Applicant argues that Colligan does not teach the plunging member "being displaced from a boundary line between said first end face and said second end face to said second end within a range equal to or smaller than the radius of the workpiece plunging member." However, this range extends from the radius of the pin to zero, or no displacement at all. As Applicant has correctly interpreted, Colligan teaches the pin traveling along the joint line, being displaced from the boundary by less than the radius of the workpiece plunging member.

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Applicant also argues that Colligan does not disclose gripping the protrusions. As explained above, it would have been obvious to one of ordinary skill in the art to grip the protrusions during welding to ensure that the workpieces remain stationary during welding.

Finally, Applicant argues that Urschel's does not teach sags and burrs. However, the flanges **8** and **10** in Urschel are the burrs and the sags are the curved part of the tube in which the welding material goes. The detailed description of the sags and burrs in the remarks on pages 14 and 15 are not claimed.

The drawings submitted June 1, 2005, have been approved.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEGHA MEHTA whose telephone number is (571)270-3598. The examiner can normally be reached on Monday to Friday 7:30 am to 5:00 pm EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Megha Mehta/
Examiner, Art Unit 1793

/Kevin P. Kerns/
Primary Examiner, Art Unit 1793